

March 23, 1943.

C. A. WOODWARD

2,314,751

ELECTRICAL CONNECTION

Filed Nov. 23, 1940

Fig. 1.

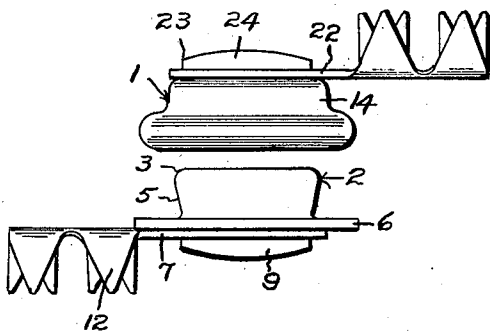


Fig. 5.

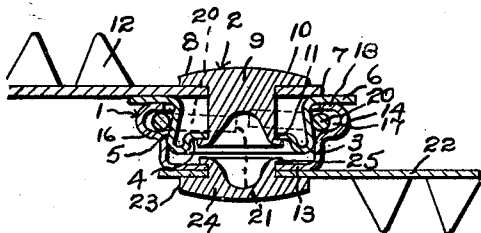


Fig. 6.

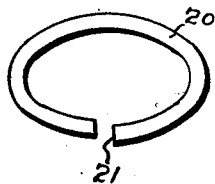


Fig. 2.

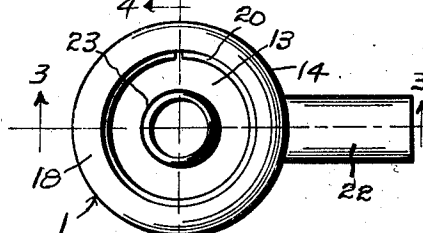


Fig. 3.

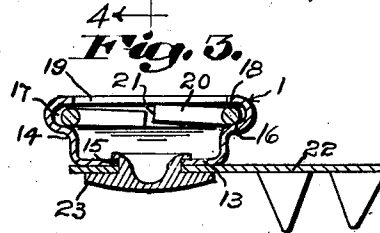


Fig. 4.

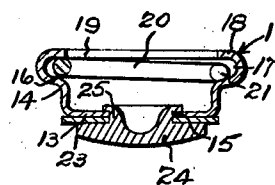


Fig. 7.



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UNITED STATES PATENT OFFICE

2,314,751

ELECTRICAL CONNECTION

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3 Claims. (Cl. 173—363)

This invention relates to electrical connections comprising stud and socket members adapted to be detachably secured in electrical engagement and is directed particularly to an improved socket member forming one unit of the connector assembly.

The chief object of my invention is the provision of an improved socket member of the so-called "quick break" type providing a split spring ring adapted to embrace a stud member of the connection so as to connect electrically the parts with the spring being formed in a way to exert constant spring tension on the casing of the socket member so as to assure a good electrical connection between the stud and casing.

Other uses and objects of my invention will be apparent from inspection of the drawing and specification hereinbelow set forth.

Referring to the drawing, in which I have illustrated a preferred embodiment of my invention:

Fig. 1 is a side elevation showing stud and socket members of my connection in position to be attached;

Fig. 2 is a bottom plan view of my improved socket member;

Fig. 3 is a section taken along the line 3—3 of Fig. 2;

Fig. 4 is a section taken along the line 4—4 of Fig. 2;

Fig. 5 is a transverse section through the stud and socket members shown in Fig. 1, the members being shown in attached relation;

Fig. 6 is a perspective view of the spring ring forming a part of the socket member; and

Fig. 7 is an edge view of the spring ring showing the ends of the ring in offset relation.

Referring in detail to the drawing, I have shown parts of a single circuit electrical connection including a socket member 1 and a plug or stud member 2 which are adapted to be detachably connected to effect a good electrical connection. The stud member 2 comprises a head 3 having a central depressed portion 4, a neck 5 and a base 6. A soldering terminal 7 is secured in electrical connection to the stud by means of a rivet 8 having a head 9 and a shank 10 projecting through the terminal and an opening 11 (Fig. 5) in the depression 4 of the head and collapsed against the depressed portion thereby securing the soldering terminal 7 between the base 6 and the rivet head 9 in positive engagement with the base 6. The soldering terminal is preferably in the form of an elongated metal strip having ears 12 integral with opposed

edges and adapted to be clamped over the insulating covering of a lead wire (not shown) to aid in securing the lead in assembly with the terminal. The bare wire of the lead is preferably secured in electrical engagement with the terminal by solder.

The socket member 1 of the connection comprises a metal casing having a base 13 and an annular rim 14. The base 13 has an aperture 15 (Fig. 3). The rim 14 has a shoulder 16 and an annular groove 17 above the shoulder, viewing Fig. 3. The free edge 18 of the rim forms a margin around an opening 19 which is of greater diameter than the stud head 3 and receives the same during connection of the parts. A spring ring 20 is confined within the groove 17 and split to provide free ends 21. The ring is normally of smaller diameter than the head 3 of the stud and is contractible and expansible so as to embrace resiliently the neck 5 of the stud when the stud is passed therethrough, as most clearly shown in Fig. 5. A soldering terminal 22, which is similar in form to the terminal 17, is secured in electrical engagement with the socket casing by means of a rivet 23 having a head 24 and a shank 25 extending through the terminal 22 and the opening 15 of the base 13 and collapsed on the other side of the base from the terminal so as to secure the terminal in positive electrical engagement with the socket casing between the rivet head and base.

The chief feature of my invention lies in the construction of the spring ring 20 wherein the ends 21 are offset laterally, as most clearly shown in Fig. 7, so that parallel planes transverse to the axis of the ring in tangential relation to the outer corners of the ends 21 are spaced apart a distance greater than the width of the groove 17. As a result the ends 21 resiliently engage the edge 18 and shoulder 16 of the rim under constant spring tension thereby assuring a positive electrical connection between the ring and the socket casing when the stud and socket members are in connection. Thus, with the present construction there is no chance of looseness between the ring and socket casing and as a result the device is particularly advantageous where the members serve to connect the leads of head phones and the like as it prevents intermittent contact, a failing which would result in an increased noise level.

Although I have illustrated and described a preferred embodiment of my invention, I do not wish to be limited thereby because the scope of my invention is best defined by the following claims.

I claim:

1. A socket member for an electrical connection, said socket member comprising a metal casing having a base and a rim, said rim having an annular groove and the free edge of said rim constituting the margin of an opening for receiving a stud comprising a part of a cooperating member of the connection, a conducting means electrically connected to said casing, a ring-shaped spring confined in said groove, said spring being adapted to embrace tightly said stud by a snap action whereby said parts are secured in connection, and said spring having casing-engaging portions contacting said rim under constant spring tension at all times so as to effect a positive electrical connection between said stud and said socket casing while permitting said spring to expand and contract for snap action between the stud and socket.

2. A socket member for an electrical connection, said socket member comprising a metal casing having a base and a rim, said rim having an annular groove and the free edge of said rim constituting the margin of an opening for receiving a stud comprising a part of a cooperating member of the connection, a lead terminal electrically connected to said casing, a ring-shaped spring confined in said groove, said spring being expansible and contractible to embrace tightly

said stud whereby said parts are secured in connection, and said spring having bent free ends engaging said rim under constant spring tension at all times so as to effect a positive electrical connection between said stud and said socket casing while permitting said spring to expand and contract for snap action between the stud and socket.

3. A socket member for an electrical connection, said socket member comprising a metal casing having a base and a rim, said rim having an annular shoulder and annular groove above said shoulder, the free edge of said rim constituting the margin of an opening for receiving a stud comprising a part of a cooperating member of the connection, a conducting means electrically connected to said casing, a ring-shaped spring confined in said groove, said spring being contractible and expansible to embrace tightly said stud whereby said parts are secured in connection, and said spring having free ends offset in different directions to engage said shoulder and said free edge under constant spring tension so as to effect a positive electrical connection between said stud and said socket casing while permitting said spring to expand and contract for snap action between the stud and socket.

CLEMENT A. WOODWARD.